CCMRP

The California Report on Coronary Artery Bypass Graft Surgery

1999 Hospital Data

Summary Report

California CABG Mortality Reporting Program

August 2003

PBGH
Pacific Business Group on Health

oshpd
Office of Statewide Health Planning & Development

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Pacific Business Group on Health and Office of Statewide Health Planning and Development,
August 2003

THE CALIFORNIA REPORT ON CORONARY ARTERY BYPASS GRAFT SURGERY

1999 Hospital Data

Summary Report

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Additional copies of the Summary Report can be obtained through the PBGH (www.pbgh.org) and OSHPD (www.oshpd.state.ca.us) Web sites. PBGH posts the hospital performance results on its California Consumer HealthScope Web site (www.healthscope.org), a public source of information on healthcare quality for California consumers.

PREFACE

August 2003

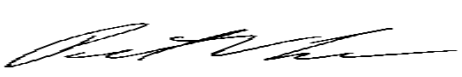
We are pleased to release ***The California Report on Coronary Artery Bypass Graft Surgery: 1999 Hospital Data*****,** the second report from the California Coronary Artery Bypass Graft (CABG) Mortality Reporting Program (CCMRP). The report reflects the continuation of an important partnership between the state, purchasers, and hospitals to voluntarily collect and release hospital performance data on mortality associated with coronary artery bypass graft surgery. In an environment of scarce resources, collaboration is critical.

Data on 70 of the 119 hospitals that regularly performed bypass surgery in 1999 are summarized in this report. These 70 hospitals performed approximately 68% of all isolated coronary artery bypass graft surgeries in California in 1999. For the 1999 analysis period, the overall in-hospital death rate for bypass surgery was 2.76% among the participating hospitals.

All 70 participating hospitals are to be commended for their explicit commitment to quality improvement—for which measurement and public accountability are requisite steps in the quality improvement process. The transparency of hospital performance information is critical to national efforts to close the quality gap identified in the Institute of Medicine's report *Crossing the Quality Chasm* (2001). Through concerted, collaborative efforts to measure and reduce performance variations, we can take concrete steps to ensure that the care provided by California hospitals is safe, effective, and efficiently delivered.

The important work of CCMRP over the last five years, which laid the foundation for public reporting of CABG outcomes and highlighted differences in death rates between participating and non-participating hospitals, set the stage for compulsory reporting of bypass surgery outcomes for hospitals and surgeons in California. The passage of Senate Bill 680 (Chapter 898, Statutes of 2001) replaces CCMRP with the California CABG Outcomes Reporting Program (CCORP) operated by OSHPD. CCORP begins its data reporting with the 2003 hospital data submission; meanwhile, CCMRP continues its work to close out the 2000-2002 data period.

Through this important partnership, our goal is to produce information that will be used to improve health outcomes for all patients who undergo bypass surgery, regardless of the hospital that they and their physicians select. To do so requires that we have knowledge about performance and that we apply this knowledge to drive improvements in the quality of care and reward those institutions that have demonstrated excellence in performance.



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We wish to recognize the important contribution made by a host of individuals in each of the participating hospitals, who dedicated their scarce time and resources to collect and clean the data for analysis. We thank the participating hospitals for their ongoing feedback on the design of the program, which is vital to our efforts to improve our work. We are also grateful for the contributions made by the members of the CCMRP Technical Advisory Panel, who provide oversight and policy guidance in the collection, analysis and presentation of the results. CCMRP also continued to collaborate with the Society of Thoracic Surgeons and its California Chapter to coordinate and improve our data collection efforts.

The California CABG Mortality Reporting Program reflects the efforts and significant contributions of numerous individuals, including:

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INTRODUCTION

Each year, approximately 26,000 Californians with advanced heart disease undergo a major surgical procedure known as coronary artery bypass graft (CABG) surgery. In California, 119 hospitals offer bypass surgery to adult patients. Prior to the establishment of the **California CABG Mortality Reporting Program (CCMRP)** and the release of its first report in July 2001, little was known about how well California hospitals performed this surgery. Such information is critical for hospital quality improvement efforts and for enabling patients and their families to make informed decisions about where to receive care that is effective and safe.

In 1995, the Pacific Business Group on Health (PBGH) and the California Office of Statewide Health Planning and Development (OSHPD) established a voluntary statewide reporting program to collect mortality data from California hospitals and to publicly report the performance results on this key marker of clinical quality. This summary report, and its companion ***The California Report on Coronary Artery Bypass Graft Surgery 1999 Hospital Data: Technical Report***, continue our series of public reports showing the performance results for California hospitals that perform bypass surgery.

The CCMRP ***1999 Hospital Data Summary Report*** presents findings from analyses of data collected from 70 of California's 119 hospitals that regularly performed CABG surgery during 1999, and focuses on in-hospital mortality as the key outcome measure.[2] The report includes results for the single calendar year 1999 (**1999 Analysis**). The **1999 Analysis** includes a total of 21,973 cases from all hospitals that submitted data to CCMRP for 1999, making it the largest public reporting program on CABG outcomes in the United States. The report also includes results from a roll-up of all continuous quarters of data submitted by hospitals since they joined CCMRP (**All Quarters Analysis**)—a period representing from one to three years' worth of data between 1997 and 1999 for each participating hospital.[3]

KEY FINDINGS

- In the single year **1999 Analysis**, the overall in-hospital death rate in California among participating hospitals was 2.76% for 1999 (meaning slightly fewer than 3 deaths per 100 cases). Nationally, the Society of Thoracic Surgeons reports an "operative mortality" rate for isolated bypass surgery of 2.90% for 1999.[4]

  Most California hospitals (67 of 70) performed "as expected," meaning the actual death rates at these institutions were within range of what was expected given the complexity of cases they treated. Three of the 70 hospitals performed significantly "worse than expected,"

[2] In-hospital mortality means the patient expired prior to discharge from the hospital that performed this operation, regardless of length of stay. Deaths are not counted after discharge even if the patient dies soon after the operation. If a patient is transferred post-operatively to a rehabilitation or transitional care facility and dies before going home, this death is not counted.

[3] CCMRP began enrolling hospitals in the program starting January 1, 1997. Enrollment in the program was ongoing during the 1997-1999 period. As a result, hospitals continuously participating since their enrollment in the program will have different numbers for their "quarters of participation." The maximum number of quarters of participation for any one hospital is 12—representing full year participation in 1997, 1998, and 1999. The minimum number of quarters of participation required for inclusion in this report is four, representing full calendar year 1999. Results for 1997-1998 data can be found in the report published by CCMRP in July 2001.

[4] Operative mortality refers to 30-day mortality. Most deaths "in-hospital" occur within 30 days. The "operative mortality" rate tends to be slightly higher than the "in-hospital" mortality rate.

meaning their actual death rates were higher than expected given the complexity of cases they treated. The three hospitals were Desert Regional Medical Center, Marin General Hospital, and Scripps Mercy. None of the 70 hospitals performed significantly "better than expected," meaning that no hospital's actual death rate was lower than expected given the complexity of cases they treated.

It is too not surprising that there are no "better than expected" performers in the analysis of the 1999 data. This is due to the very low mortality rate associated with bypass surgery (fewer than 3 deaths for every 100 cases in 1999) and the wide confidence intervals around the estimates of 1999 performance for a large share of California hospitals with low annual volumes of CABG cases. These factors make it very difficult for hospitals to distinguish themselves as "better than expected" performers when looking only at a single year's worth of results.

- In the multi-year **All Quarters Analysis**, representing from one to three years' worth of data between 1997 and 1999 for each of the 70 participating hospitals, the overall in-hospital death rate was 2.60%. Because the **All Quarters Analysis** represents more cases for each hospital (save those with 1999 data only)[5], it allows for greater precision in estimating each hospital's performance (this means smaller confidence intervals around each hospital's expected death rate) and increases our ability to distinguish performance differences among hospitals. The aggregation of data over multiple years is especially important for evaluating the performance of small volume hospitals, whose mortality experience tends to be more variable year-to-year.

  The **All Quarters Analysis** revealed that of the 70 hospitals publicly reporting, five hospitals performed "better than expected," 59 hospitals performed "as expected," and six hospitals performed "worse than expected."
  - **"Better than Expected" hospitals**—Doctor's Medical Center-San Pablo, Heart Hospital of the Desert, Scripps Memorial Hospital, Summit Medical Center, and Sutter Memorial Hospital.
  - **"Worse than Expected" hospitals**—Alta Bates Medical Center, Desert Regional Medical Center, Marin General Hospital, Memorial Medical Center of Modesto, Presbyterian Intercommunity Hospital, and Scripps Mercy.

- The expected death rate ranged from 1.2% to 5.4%, revealing wide variation among California hospitals with respect to the case mix of patients they treat. This underscores the importance of adjusting for differences in case mix to produce outcome scores.

- The public has reason to be concerned about the performance of the 49 non-participating hospitals. First, our evaluation of the relationship between the volume of CABG procedures a hospital performs and in-hospital mortality shows that, on average, CCMRP hospitals with mean annual volumes of *fewer than 200* cases experienced statistically significantly higher mortality than hospitals with *300 or more* cases annually. This finding raises concerns about the performance of hospitals whose results do not appear in this report, especially since 35 of the 49 non-participants had annual surgical volumes of *fewer than 200* cases.

  Second, based on data from OSHPD's Patient Discharge Database (PDD), the "raw" *unadjusted* mortality rate for the 49 hospitals that declined to participate in CCMRP was

[5] Twelve hospitals began participation in 1999; their All Quarters rate thus reflects performance solely for that single year.

3.34% in 1999 compared to 2.73% for the 70 participants[6]. Of the 49 non-participants, 11 submitted usable data but were either dropped (2 hospitals) or withdrew (9 hospitals) prior to publication of this report. The *unadjusted* in-hospital death rate for these 11 hospitals was 3.21%. Non-participants tended to have worse performance results than did participants, which underscores the importance of compulsory reporting for all hospitals.

THE NEED FOR COMPARATIVE OUTCOME INFORMATION

CABG surgery is a frequently performed and costly procedure. Based on data from OSHPD's 2001 PDD, 25,932 isolated[7] coronary artery bypass graft surgeries were performed at 119 California hospitals. For 2001, the average hospital charge for a bypass procedure was approximately $129,770 (OSHPD, 2001).[8] For some hospitals, only births comprised a larger proportion of their total revenue.

Patients and employers—who often serve as purchasing agents for employee and dependent populations—face difficulties in making informed healthcare purchasing and treatment decisions. Rarely is comparative information on health outcomes readily available to help guide consumer and purchaser choice in the marketplace. This is particularly true for information about hospital performance. Consequently, purchasing and treatment decisions typically are based on price alone and not on the overall value of services—a key component of which is the quality of care as measured by outcomes and adherence to evidence-based practices.

The development of narrow and tiered hospital networks by health plans underscores the importance of having reliable performance information to distinguish hospitals on their overall value to consumers. In the absence of outcomes data, plan decisions about which tier a hospital is placed into will largely be determined by price—which neither benefits patients nor rewards better performing hospitals. Moreover, patients typically are referred to a hospital for surgery based on a recommendation from their cardiologist; rarely do outcome information or proxy measures of performance such as the number of procedures a hospital performs factor into the decision.

Most importantly, in our efforts to promote the delivery of high quality care, there is a need among California hospitals and surgeons for comparative performance data. This type of information is lacking for all hospital procedures with the exception of bypass surgery and acute myocardial infarction. Performance information is vital to help hospitals understand where quality of care problems may exist and to target improvement efforts. Measurement and public accountability are powerful stimuli in driving quality improvements in all sectors, including healthcare (Hibbard et al., 2003).

[6] Calculations of observed mortality rates differ slightly depending on the data source. When comparing CCMRP non-participating hospitals to CCMRP participants, it was necessary to utilize data from OSHPD's PDD. All other analyses are based on data submitted directly to CCMRP from participating hospitals.

[7] Isolated means no patient received both a CABG and an additional major procedure such as a valve repair or replacement during the same operation. Isolated CABG surgeries comprise the majority of heart operations in California and the U.S.

[8] Calculations refer to total charges per discharge for an isolated CABG procedure. Few hospitals actually receive payment in the amount represented by charges. Reimbursement rates are negotiated between health plans and hospitals and typically are much lower than charges.

By making hospital-level performance results on bypass surgery publicly available, CCMRP seeks to provide comparative outcome data to multiple end-users:

- **Hospitals and their clinical teams—**to stimulate and facilitate quality review of surgical procedures and processes of care that will lead to improved outcomes.
- **Physicians—**to help guide referrals of patients to hospitals and cardiac surgery teams with good surgical outcomes.
- **Purchasers of care—**to assess hospital performance and incorporate quality measures in their benefit designs and purchasing decisions.
- **Patients and family members—**to enable them to understand differences in treatment outcomes across various hospitals to allow for more informed choice of hospital.

DESCRIPTION OF THE REPORTING PROGRAM

CCMRP is a voluntary statewide hospital-reporting program that collects and reports on CABG operative mortality at the hospital level. CCMRP produces uniform, hospital-level mortality rates, adjusted to account for differences across hospitals in the mix of patients undergoing CABG surgery.

Hospital Participation
All 119 California hospitals that performed at least 25 adult CABG surgeries in 1999 were formally invited to participate in the program. Among these 119 institutions, 70 hospitals agreed to submit data, participate in the audit and publicly report their results, while 49 hospitals did not participate for various reasons. A complete list of hospitals eligible to participate in CCMRP and their participation status can be found in Appendix A of this report.

Hospitals that participated in CCMRP were asked to submit 41 data elements that described the demographic characteristics and pre-operative condition (risk factors) for each patient who underwent an isolated CABG procedure at their hospital. The data elements were selected after a thorough review of the clinical literature on risk predictors for bypass surgery and an examination of variables collected by the leading cardiac reporting programs. With some clarifications, CCMRP draws on a subset of data elements collected by the Society of Thoracic Surgeons (STS) for their National Database of Cardiac Surgery.

For the **1999 Analysis**, the 81 hospitals that initially submitted data provided 21,973 usable records to CCMRP. Of the 81 hospitals, 68 had previously submitted data for all or parts of 1997 and/or 1998.[9] As such, the **All Quarters** dataset containing combined rolled-up data across multiple years represents a total of 49,823 cases. All hospitals shown in this report submitted a minimum of four quarters of data for 1999.

[9] Enrollment in CCMRP is ongoing and hospitals can join at any time. Consequently, participants have varying numbers of quarters of data submissions, depending on the date they joined CCMRP.

Data Quality Review
CCMRP used various strategies to evaluate the data submitted from each hospital for completeness and potential data errors. CCMRP engaged in the following steps to clean and verify each hospital's data submission:

- Produced hospital-specific data reports highlighting coding issues for hospitals to review and take actions to correct;
- Linked the CCMRP record to OSHPD's PDD to evaluate the accuracy of isolated CABG case submission and patient *Discharge Status* (alive/dead), with phone follow-up to hospitals to resolve resulting issues;
- Conducted a medical record audit of a subset of cases at 36 hospitals and replaced missing/inconsistent data with audited data;
- Imputed any residual missing or invalid data values.

Two hospitals that refused to undergo the audit and two hospitals with significant data problems that they were unable to fix were dropped from the program.

Readers interested in a more thorough explanation of the data collection, cleaning, audit and verification processes should refer to ***The California Report on Coronary Artery Bypass Graft Surgery 1999 Hospital Data: Technical Report*** (PBGH and OSHPD, 2003).

ADJUSTING THE HOSPTIAL MORTALITY DATA FOR PATIENT MIX

Patients treated at different hospitals may vary in the severity of their pre-operative clinical condition. To fairly compare outcomes at different hospitals, it is necessary to adjust for differences in the case mix of patients across hospitals. CCMRP "levels the playing field" by accounting for the pre-operative condition of each patient using a multivariate logistic regression model. The risk model evaluates the relationship between each of the demographic and pre-operative risk variables and the likelihood of in-hospital mortality. Hospitals that routinely handle complex cases (i.e., sicker at the time of admission) get a larger risk-adjustment weighting in the risk model, while hospitals that handle less complex cases get a smaller weighting. CCMRP intentionally included as risk-adjustment variables only those data elements that describe the patient's condition prior to the heart bypass procedure.

Several statistical tests were performed to assess how well the model fit the data. The tests showed a high degree of agreement between the actual number of deaths at each hospital and the number of deaths predicted for that hospital when using the risk-adjustment model. This means the risk model gives hospitals appropriate credit for treating more complex cases. Consequently, hospitals and surgeons should not exclude high-risk patients from appropriate CABG surgeries as a means to improve performance scores.

Readers interested in a more thorough explanation of the risk-adjustment methods used should refer to ***The California Report on Coronary Artery Bypass Graft Surgery 1999 Hospital Data: Technical Report*** (PBGH and OSHPD, 2003).

COMPARISON OF CCMRP PARTICIPANTS TO NON-PARTICIPANTS

The voluntary nature of CCMRP begs the question: are the mortality rates of non-participating hospitals substantially different from those that participated? Because non-participants did not submit the clinical data necessary to adjust for differences in the case mix of patients across hospitals, a direct comparison of *risk-adjusted* mortality rates between CCMRP participants and non-participants is not possible.

However, CCMRP was able to utilize data available from OSHPD's PDD to calculate the "raw" or *unadjusted* death rates for both participating and non-participating hospitals. As presented in the table below, the overall death rate of 3.34% among non-participating hospitals is statistically significantly higher than the overall death rate of 2.73% among CCMRP participants.[10] Also, in all but one volume category, the *unadjusted* death rate is higher among the non-participating hospitals as compared to CCMRP participating hospitals. However, this difference was found to be statistically significant only in the *100 or fewer* category (4.20% for non-participants vs. 2.45% for participants).

Comparison of Unadjusted Mortality Rates:
CCMRP Participating Hospitals vs. Non-Participating Hospitals

Volume	Participants		Non-Participants	
	Number Hospitals	Death Rate	Number Hospitals	Death Rate
under 200	35	3.29	35	4.03
200 to 299	19	3.33	6	3.32
300 to 599	12	2.23	7	3.55
600 or more	4	2.06	1	0.47
Total	70	2.73[11]	49	3.34

Source: OSHPD, PDD, 1999.

THE RELATIONSHIP BETWEEN HOSPITAL VOLUME AND MORTALITY

A number of studies have found a statistically significant relationship between the annual number of bypass surgeries a hospital performs and mortality (Farley, 1992; Hannan et al., 1989; Hannan et al. 1991; Showstack et al., 1987; Dudley et al., 2000). On average, hospitals

[10] Based on Fisher's exact test for differences, p-value = 0.0054.

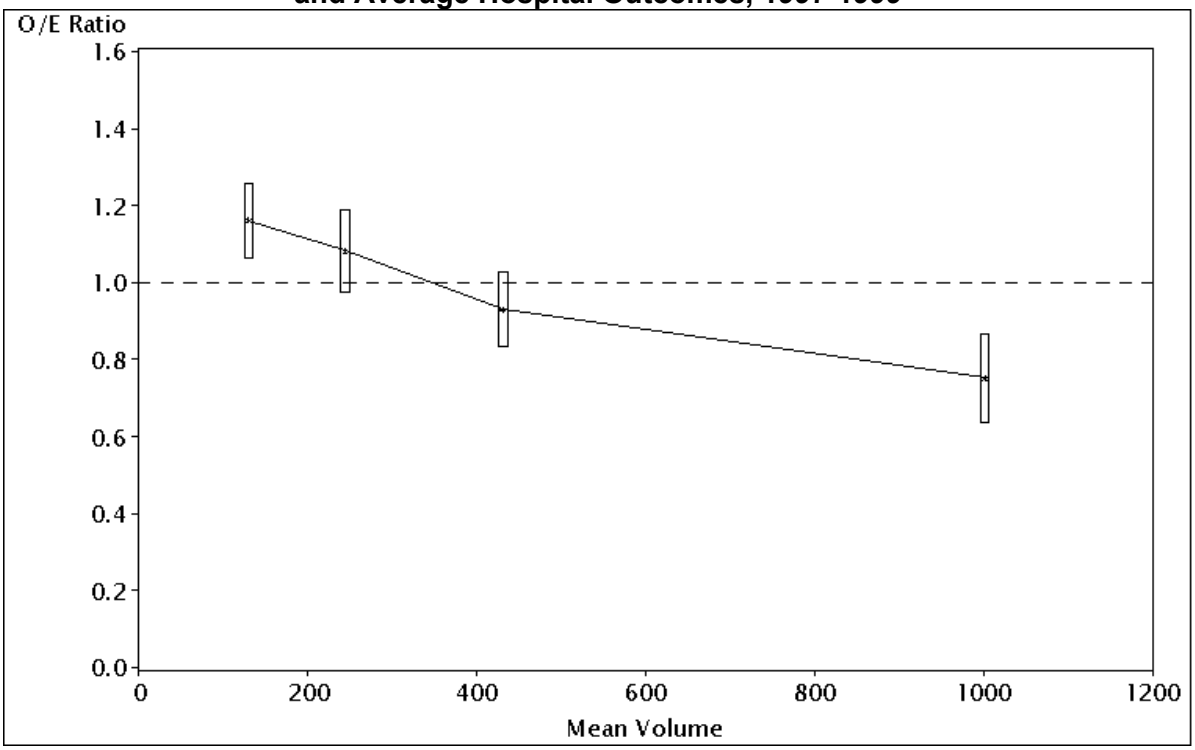
[11] This number differs slightly from the observed mortality rate of 2.76% for CCMRP participating hospitals reported elsewhere in the report. The rate of 2.73% is based on OSHPD patient discharge data (utilizing ICD-9-CM codes to determine isolated CABGs), while 2.76% is based on data submitted directly to CCMRP by each participating hospital (using a clinical definition of isolated CABGs).

that perform a higher volume of coronary bypass procedures achieve better outcomes—meaning they tend to have a lower death rate as compared to lower volume hospitals. The California CABG data provide a unique opportunity to examine whether there is a relationship between surgical volume and in-hospital mortality. This is particularly important in California for two reasons. First, California has a large proportion of low volume institutions compared to other states. For example, only 21% of the 33 hospitals performing bypass surgery in New York in 1999 performed fewer than 300 cases annually. However, 80% of California's 119 hospitals that provided bypass surgery in 1999 performed fewer than 300 cases annually. Second, we do not have risk-adjusted outcomes data for 49 of the 119 California hospitals that perform CABG. In the absence of outcomes data, the annual volume of bypass surgeries a hospital performs is one of the few proxy measures of performance available to the public.

The CCMRP analysis showed that as volume increases, risk-adjusted mortality decreases (a statistically significant relationship). Wide variation in performance among lower volume hospitals (i.e., those with *300 or fewer* cases annually) as compared with higher volume hospitals was also found.

As shown in Figure 1, the two highest volume groups (*300-599* cases and *600 or more* cases) had significantly lower mortality when compared to the lowest volume group (*200 or fewer* cases annually). In addition, the highest volume group (*600 or more* cases) had significantly better outcomes than the second group (*200 to 299* cases annually).

Figure 1: Relationship Between Average CABG Volume and Average Hospital Outcomes, 1997-1999



The analysis of the 1997-1999 CCMRP data supports findings from other studies that risk-adjusted in-hospital mortality and volume are related. While it is true that, on average, smaller volume hospitals tend to perform worse than larger hospitals and experience wide variation in performance, the **All Quarters** results demonstrate that low-volume hospitals can achieve good outcomes. A more detailed description of the volume-outcome analyses can be found in ***The California Report on Coronary Artery Bypass Graft Surgery 1999 Hospital Data: Technical Report***.

HOSPITAL-SPECIFIC RATINGS: 1999 AND ALL QUARTERS RESULTS

Two logistic regression models were run to adjust for differences in the mix of patients across hospitals for the **1999** and the **All Quarters** dataset (see ***The California Report on Coronary Artery Bypass Graft Surgery 1999 Hospital Data: Technical Report*** (PBGH and OSHPD, 2003). From the logistic regression model, we computed the expected in-hospital mortality rate and a 95% confidence interval around this estimate. We then compared each hospital's actual death rate to the 95% confidence interval around its expected death rate. If the actual death rate fell outside the 95% confidence interval around the expected death rate—either below or above—then the hospital was classified as performing "better than expected" or "worse than expected." If the actual death rate fell within the 95% confidence interval around the expected death rate, the hospital was classified as performing "no different than expected."

1999 Analysis Findings

For **1999**, 515 patients out of a total of 18,673 died in-hospital, reflecting an overall in-hospital death rate of 2.76% for the CCMRP participating hospitals. The 70 hospital participants received the following designations:

- **"No Different than Expected" performance**—67 hospitals
- **"Worse than Expected" performance**—three hospitals
  - Desert Regional Medical Center, Marin General Hospital, and Scripps Mercy
- **"Better than Expected" performance**—no hospital

It may seem surprising that no hospital received a performance grade of "better than expected." One of the reasons for this is the low mortality rate associated with bypass surgery (fewer than 3 deaths for every 100 cases in 1999), along with the wide confidence intervals around the expected rate for many hospitals. When only looking at data for a single year, confidence intervals can be quite wide for hospitals with low annual volumes of CABG cases. Given that California has many hospitals with small annual case volumes, this makes it more difficult to identify statistical outliers.

All Quarters Findings

The **All Quarters** data include a total of 1,048 in-hospital deaths out of 40,265 cases, reflecting an overall in-hospital death rate of 2.60%. This rate can be compared to a risk-adjusted death rate of 2.20% in New York State for the 1997-1999 period, and an overall national rate of 2.9% for 1999 as reported by the Society of Thoracic Surgeons for 30-day operative mortality.[12]

[12] Because some deaths occur after discharge but within 30 days, 30-day operative mortality is slightly higher than in-hospital mortality.

Given a larger number of cases for most hospitals as compared to the single year **1999** analysis, we have a greater ability to identify statistical outliers. For the **All Quarters** analysis, the 70 hospital participants received the following designations:

- **"No Different than Expected" performance**—59 hospitals
- **"Worse than Expected" performance**—six hospitals
  - Alta Bates Medical Center, Desert Regional Medical Center, Marin General Hospital, Memorial Medical Center of Modesto, Presbyterian Intercommunity Hospital, and Scripps Mercy
- **"Better than Expected" performance**—five hospitals
  - Doctor's Medical Center-San Pablo, Heart Hospital of the Desert, Scripps Memorial Hospital-La Jolla, Summit Medical Center, and Sutter Memorial Hospital

Figures 2 and 3 present the risk-adjusted results for each of the 70 CCMRP participants in the single year **1999** and the multi-year **All Quarters** analyses, respectively. The results are shown graphically, sorted alphabetically within geographic region.

GUIDE TO INTERPRETING THE GRAPHS

The graphs display the following information about each hospital's performance:

***Average Volume*:** The average annual volume of isolated CABG cases for each hospital.

***Observed death rate*:** Represented by the solid dots. This is the actual death rate for the hospital. It is calculated by dividing the number of observed deaths for the hospital by the total number of cases for the hospital. For example, if the hospital had 250 isolated CABG cases, with seven actual in-hospital deaths, the observed death rate would be 7/250 = 2.8%.

***Expected death rate*:** Represented by the vertical lines. The number of "expected" or predicted deaths from the risk model is divided by the total number of cases for the hospital to derive the expected death rate. If the hospital had 250 isolated CABG cases and an expected number of in-hospital deaths of 8.2, the *expected death rate* would be 8.2/250 = 3.28%. Note, the expected death rate is a measure of the average severity of illness of each hospital's isolated CABG patients; the higher the expected rate, the higher the average severity. The average death rate for the entire 1999 dataset is 2.83%[13], so if a hospital's expected death rate is higher than 2.83%, the hospital's isolated CABG patients tend to be higher risk than the overall population of CABG patients in CCMRP's dataset.

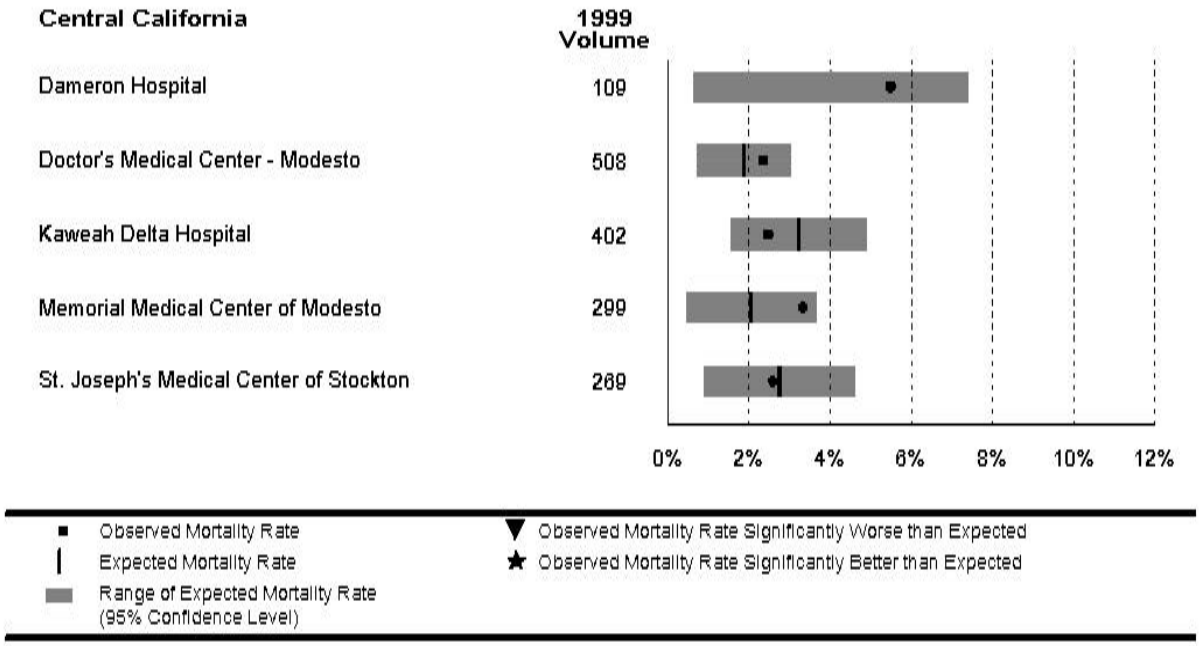
***Lower and upper confidence intervals on the expected death rate*:** Represented by the bars. Confidence intervals provide a measure of the confidence regarding the estimate of the "expected" death rate. A lower confidence limit bound on the expected rate is computed by subtracting twice the standard deviation from the expected rate. Similarly, the upper bound is calculated by adding twice the standard deviation to the expected rate. Two standard deviations (2SD) below and above the expected rate is an approximate 95% confidence interval. The range that is bounded by the upper and lower intervals can be interpreted as 95 out of 100 times, the "true expected death rate" would fall within that range. Smaller intervals mean we have more confidence in our estimate. The width of the confidence interval depends both on the number of cases a hospital submitted, and the variability of the difference in the risks for the hospital's isolated CABG patients. A hospital with a larger number of cases will have a narrower confidence interval than a hospital with fewer cases.

***Overall performance rating*:** The hospital's overall performance rating is based on a comparison of each facility's *observed death rate* to the 95% confidence interval around the hospital's *expected death rate*. This is a test of statistical significance.

- **Worse than expected**—the observed death rate is higher than the upper bound of the 95% confidence interval of the expected death rate.
- **Better than expected**—the observed death rate is lower than the lower bound of the 95% confidence interval of the expected death rate.
- **No different than expected**—the observed death rate falls within the 95% confidence interval of the expected death rate.

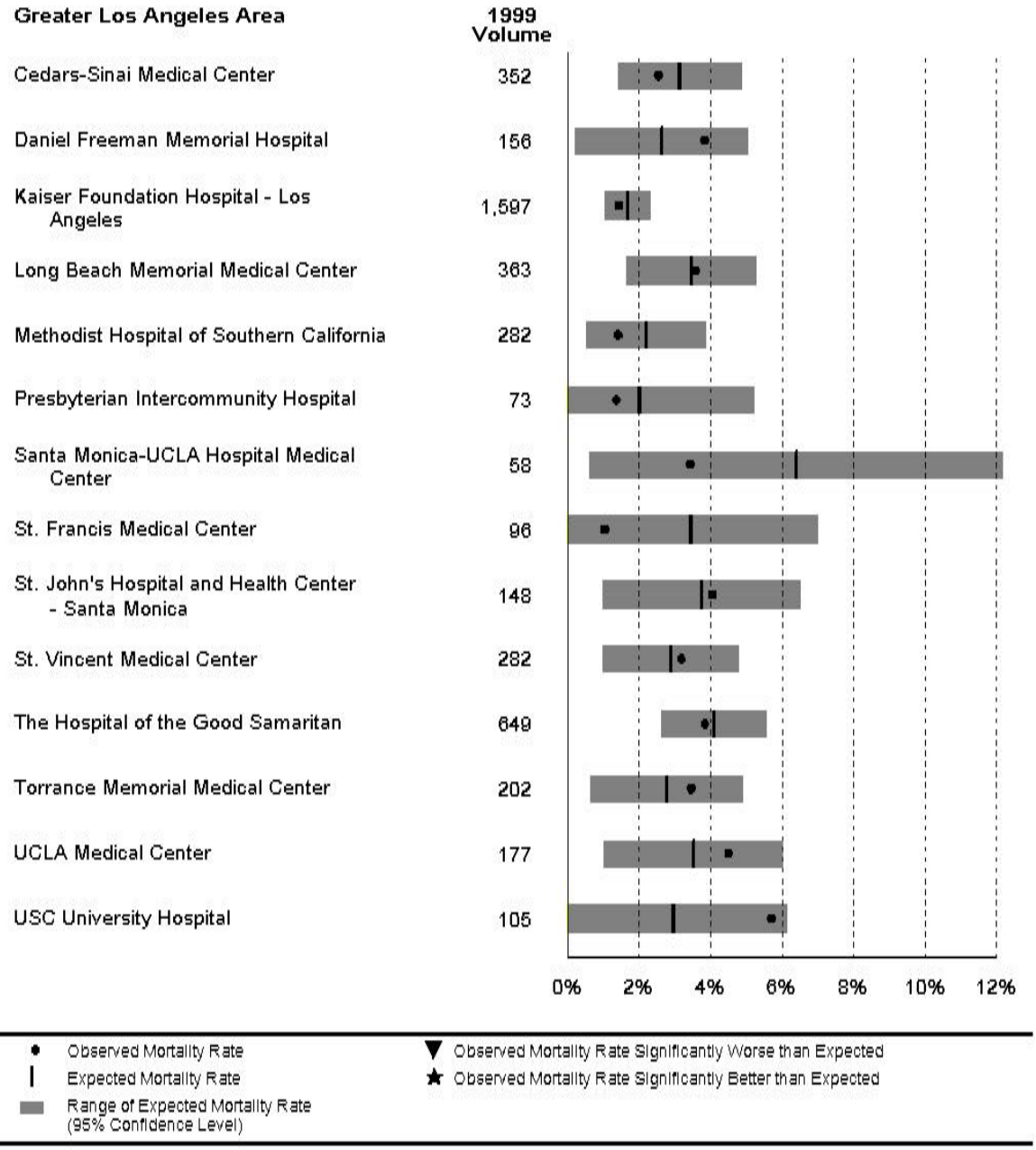
[13] The 1999 risk model is based on data from 81 hospitals that submitted data to CCMRP for 1999; although only 70 hospitals ultimately agreed to public reporting. The death rate of 2.83% is that for the complete set of data included in the 1999 risk model—21,973 cases from the 81 hospitals that submitted data.

Figure 2: Comparison of Observed to Expected Mortality Rate, 1999
(in Alphabetical Order by Geographical Region)



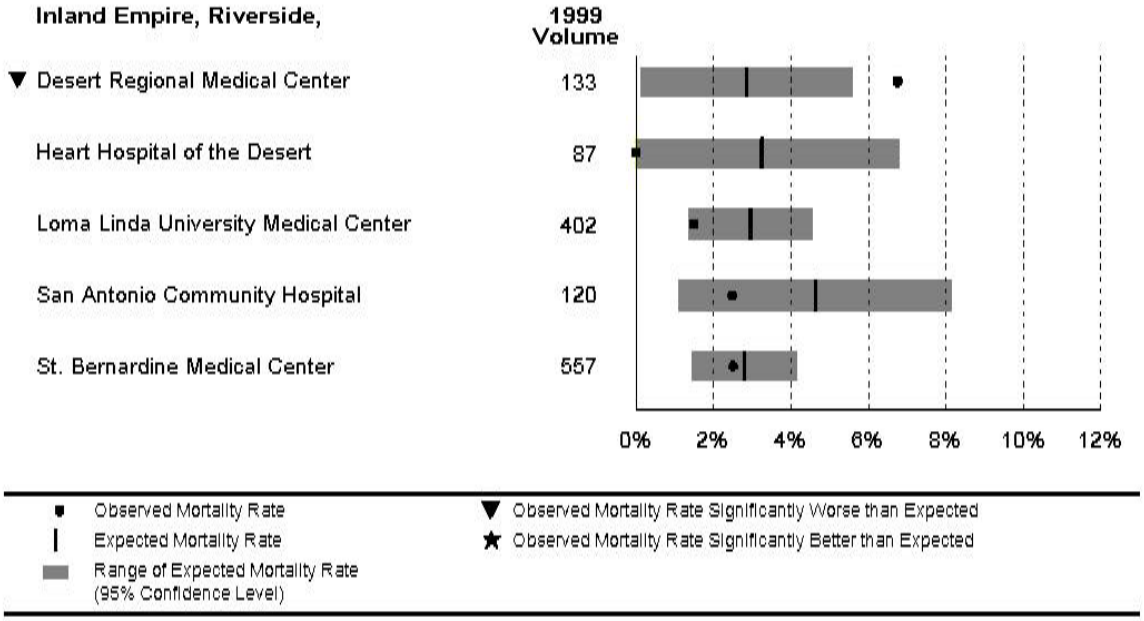
NOTE: The following hospitals in this region declined to participate:
Bakersfield Memorial Hospital, Fresno Community Hospital and Medical Center, Marian Medical Center, San Joaquin Community Hospital, St. Agnes Medical Center.

Figure 2: Comparison of Observed to Expected Mortality Rate, 1999
(cont.) (in Alphabetical Order by Geographical Region)



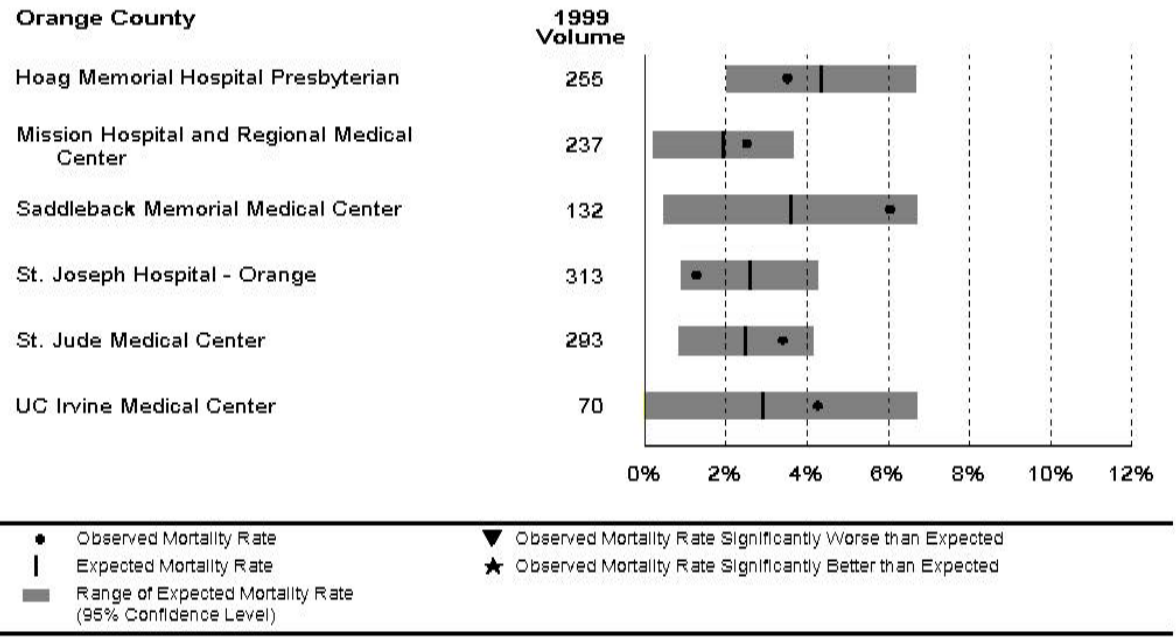
NOTE: The following hospitals in this region declined to participate:
Beverly Hospital, Brotman Medical Center, Centinela Hospital Medical Center, Downey Community Hospital, Garfield Medical Center, Huntington Memorial Hospital, Intercommunity/Citrus Valley Medical Center, LA County, Harbor-UCLA Medical Center, LA County/USC Medical Center, Lakewood Regional Medical Center, Little Company of Mary, St. Mary's Medical Center - Long Beach, White Memorial Medical Center.

Figure 2: Comparison of Observed to Expected Mortality Rate, 1999 (cont.) (in Alphabetical Order by Geographical Region)



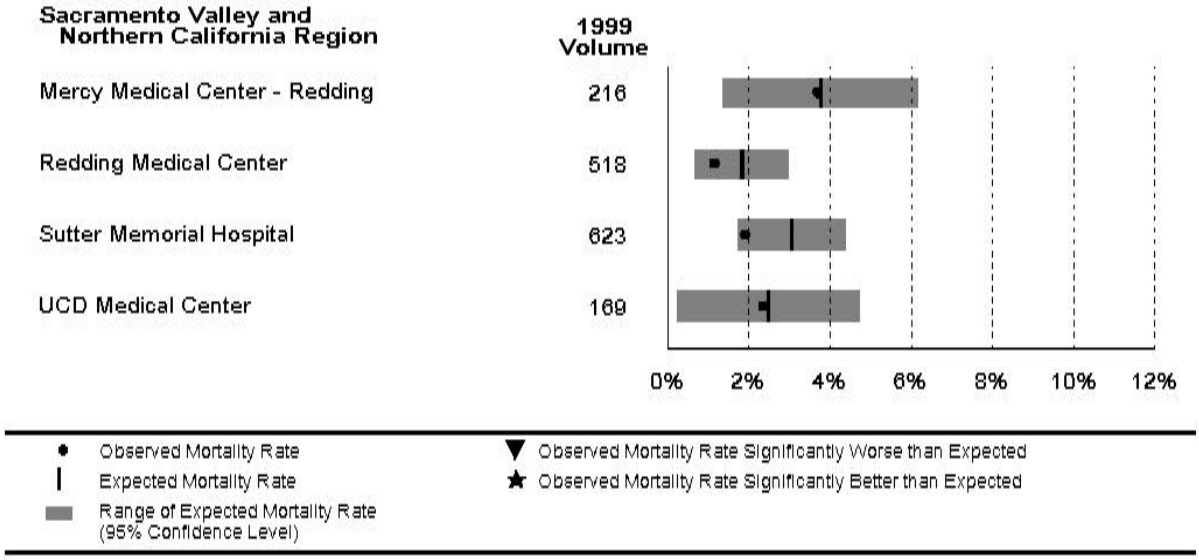
NOTE: The following hospitals in this region declined to participate:
Eisenhower Medical Center, Pomona Valley Hospital and Medical Center, Riverside Community Medical Center, St. Mary's Regional Medical Center.

Figure 2: Comparison of Observed to Expected Mortality Rate, 1999
(cont.) (in Alphabetical Order by Geographical Region)



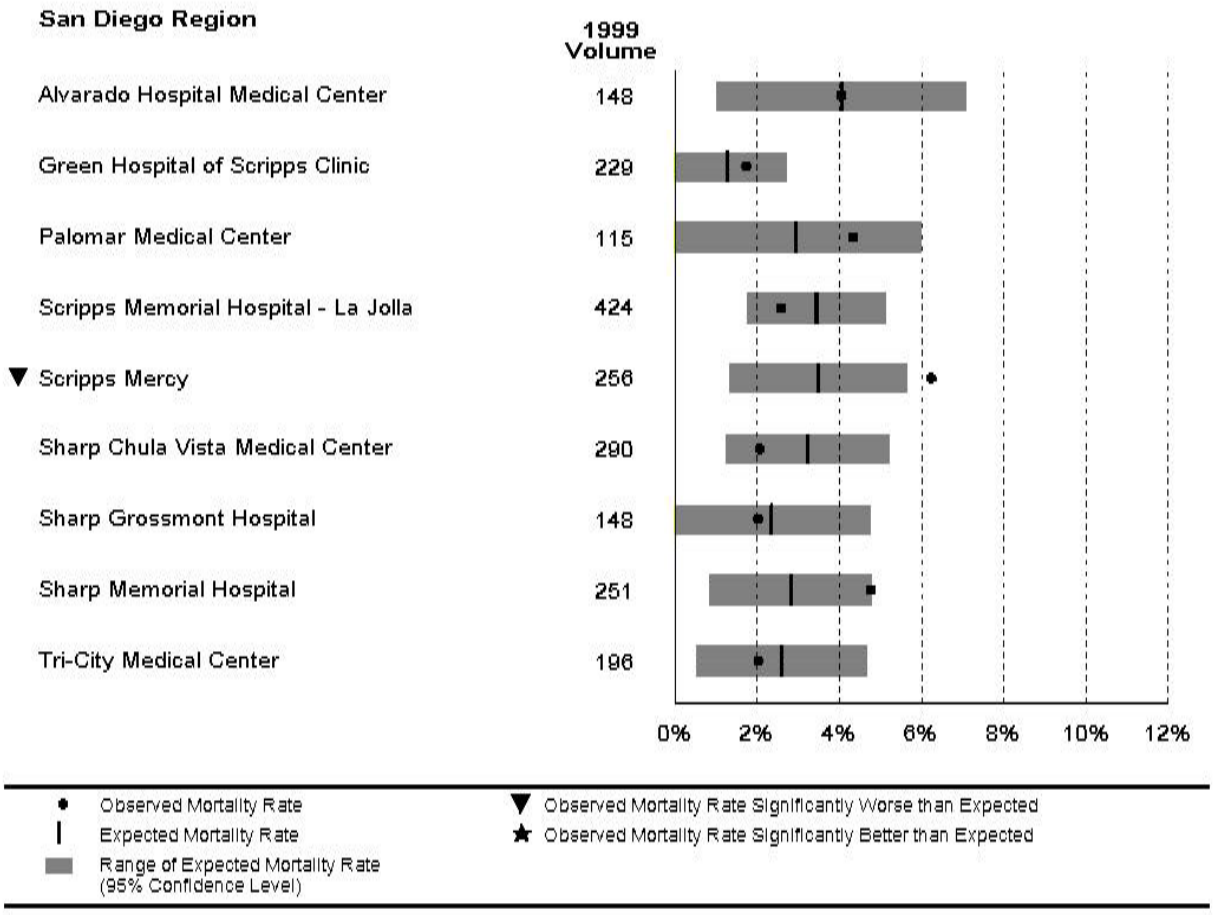
NOTE: The following hospitals in this region declined to participate:
Anaheim Memorial Medical Center, Fountain Valley Regional Hospital, West Anaheim Medical Center, Western Medical Center - Anaheim, Western Medical Center - Santa Ana.

Figure 2: Comparison of Observed to Expected Mortality Rate, 1999
(cont.) (in Alphabetical Order by Geographical Region)



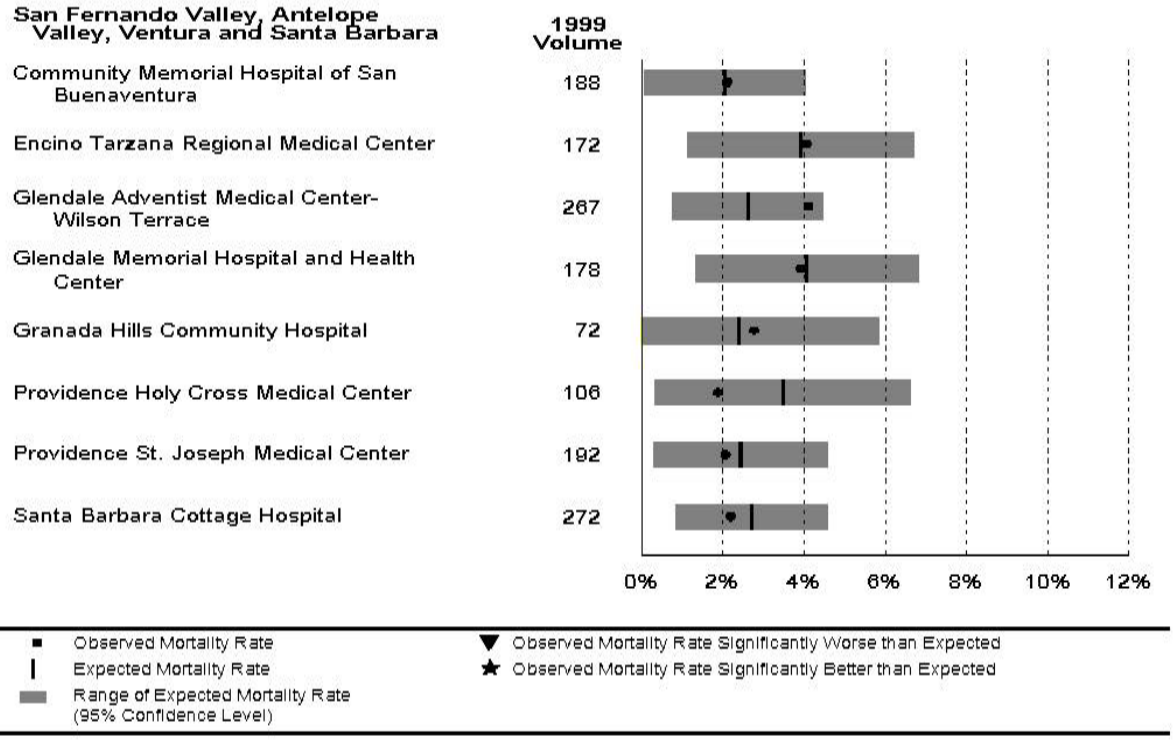
NOTE: The following hospitals in this region declined to participate:
Enloe Medical Center, Mercy General Hospital, Mercy San Juan Hospital.

Figure 2: Comparison of Observed to Expected Mortality Rate, 1999
(cont.) (in Alphabetical Order by Geographical Region)



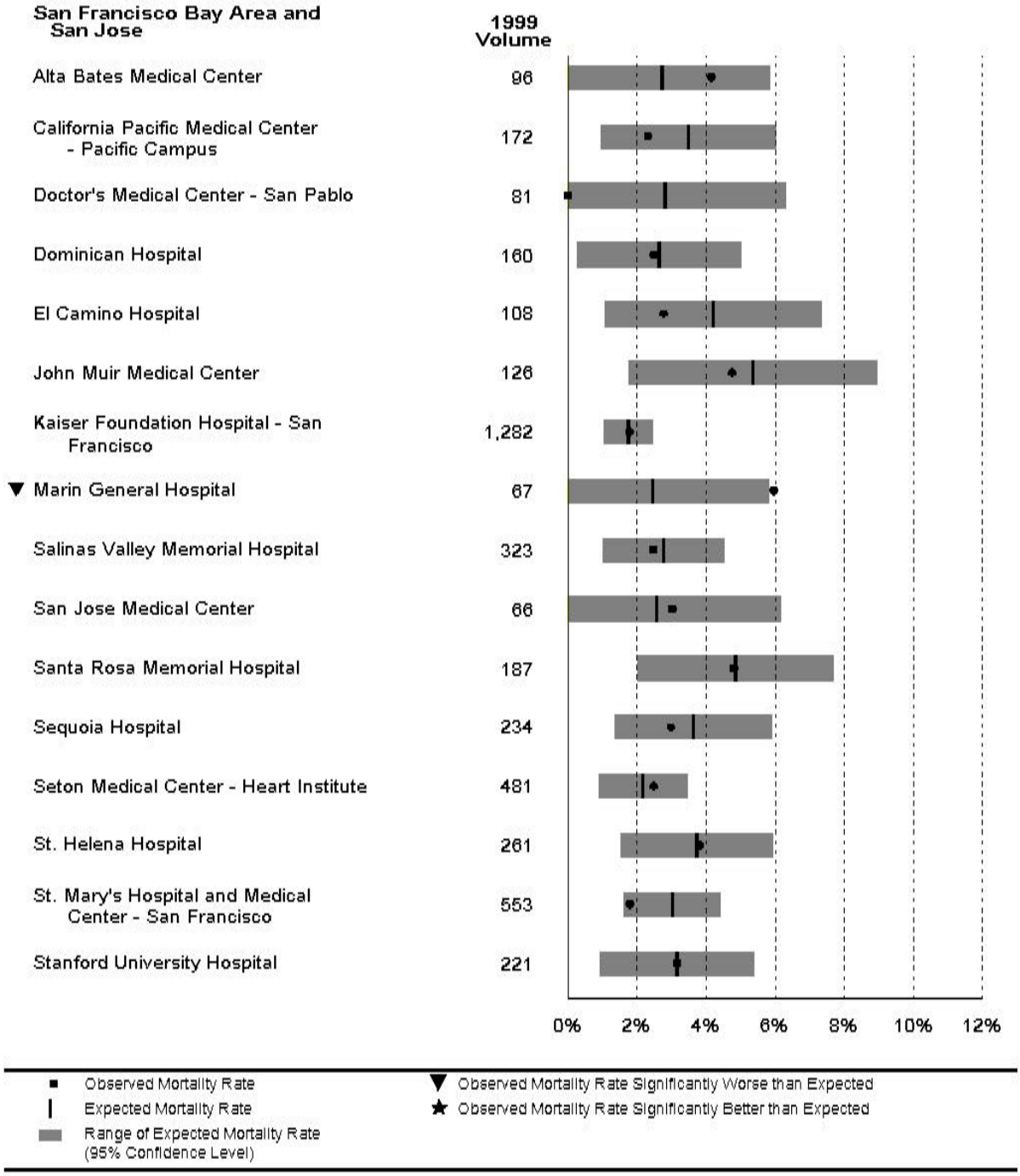
NOTE: The following hospitals in this region declined to participate:
UCSD Medical Center - Hillcrest, UCSD Medical Center - Thornton.

Figure 2: Comparison of Observed to Expected Mortality Rate, 1999
(cont.) (in Alphabetical Order by Geographical Region)



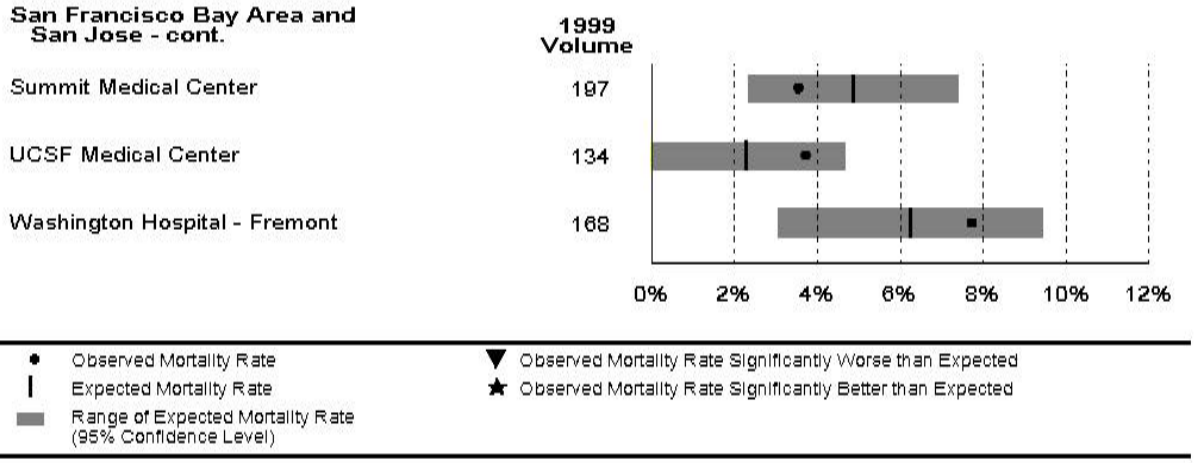
NOTE: The following hospitals in this region declined to participate:
Antelope Valley Hospital Medical Center, French Hospital - San Luis Obispo, Lancaster Community Hospital, Los Robles Regional Medical Center, Northridge Hospital Medical Center, St. John's Regional Medical Center - Oxnard, Valley Presbyterian Hospital, West Hills Regional Medical Center.

Figure 2: Comparison of Observed to Expected Mortality Rate, 1999
(cont.) (in Alphabetical Order by Geographical Region)



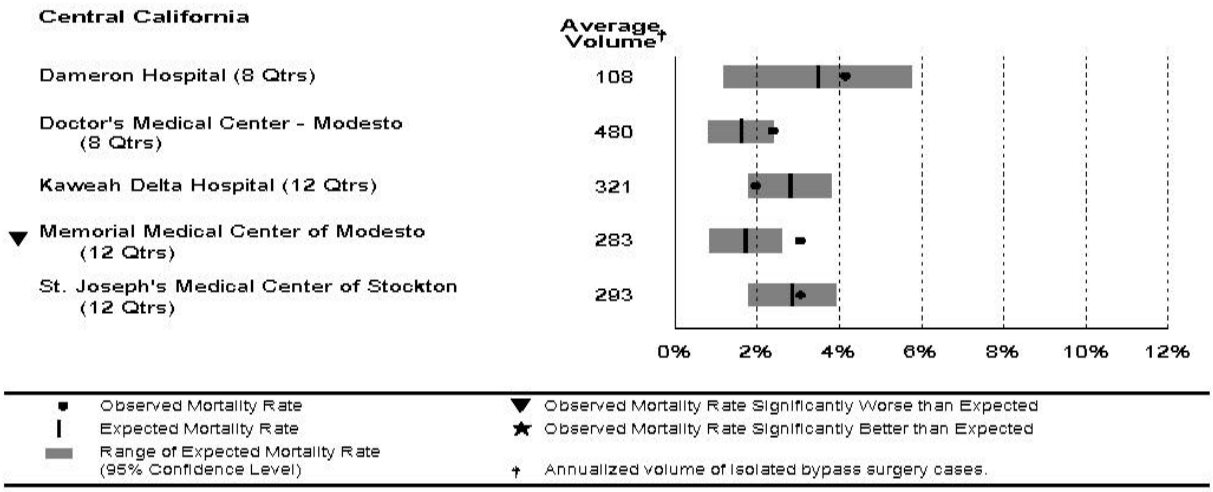
NOTE: The following hospitals in this region declined to participate:
Good Samaritan Hospital - San Jose, Mt. Diablo Medical Center, O'Conner Hospital, Queen of the Valley Hospital, Santa Clara Valley Medical Center, Mills-Peninsula Hospital.

Figure 2: Comparison of Observed to Expected Mortality Rate, 1999
(cont.) (in Alphabetical Order by Geographical Region)



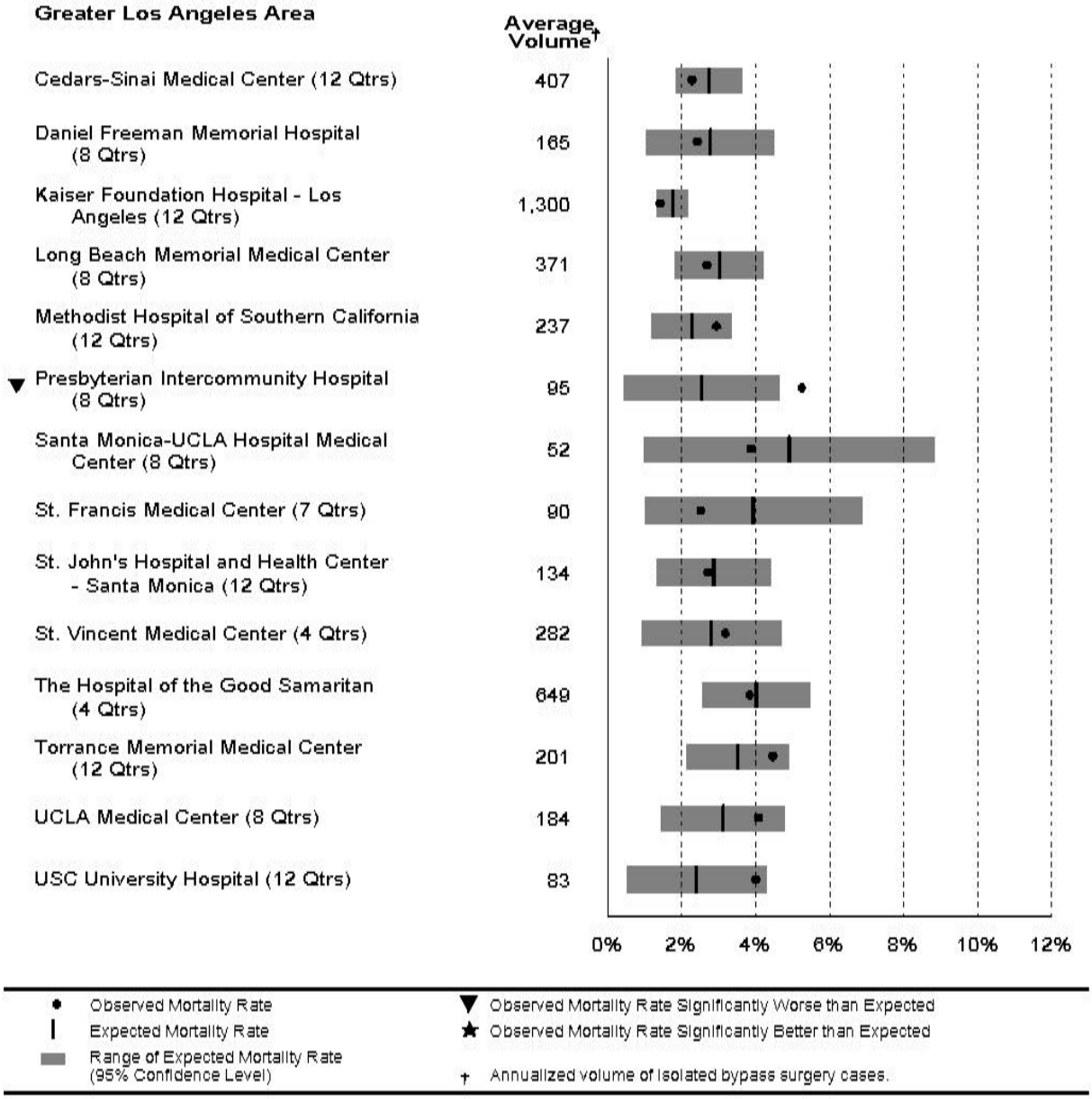
NOTE: The following hospitals in this region declined to participate:
Good Samaritan Hospital - San Jose, Mt. Diablo Medical Center, O'Conner Hospital, Queen of the Valley Hospital, Santa Clara Valley Medical Center, Mills-Peninsula Hospital.

Figure 3: Comparison of Observed to Expected Mortality Rate, 1997-1999
(in Alphabetical Order by Geographic Region)



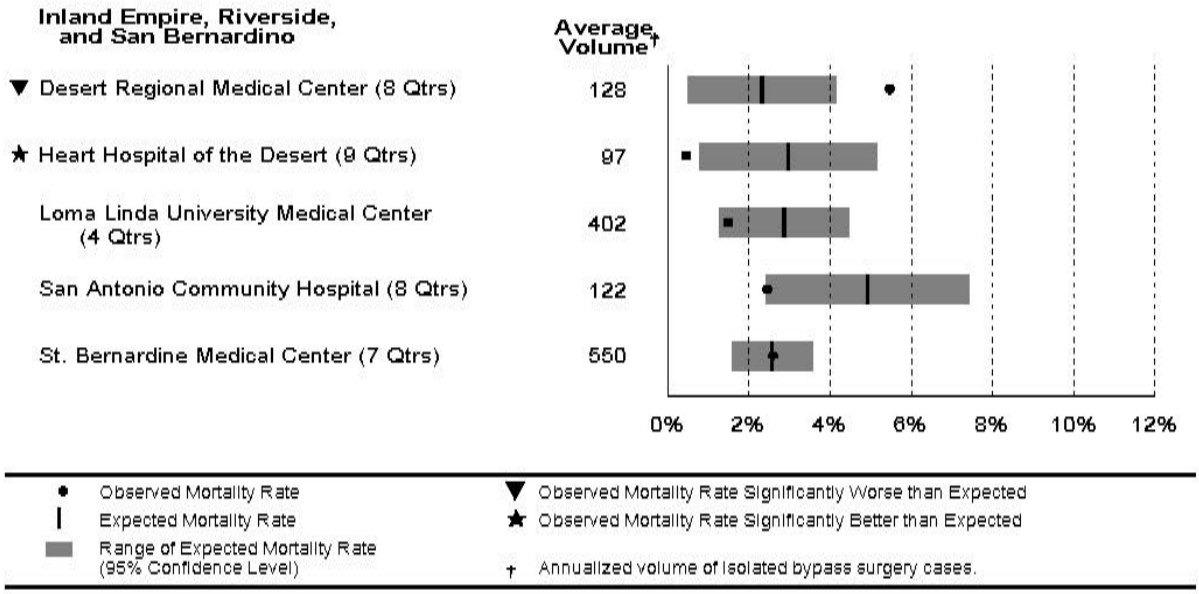
NOTE: The following hospitals in this region declined to participate:
Bakersfield Memorial Hospital, Fresno Community Hospital and Medical Center, Marian Medical Center, San Joaquin Community Hospital, St. Agnes Medical Center.

Figure 3: Comparison of Observed to Expected Mortality Rate, 1997-1999
(cont.) (in Alphabetical Order by Geographical Region)



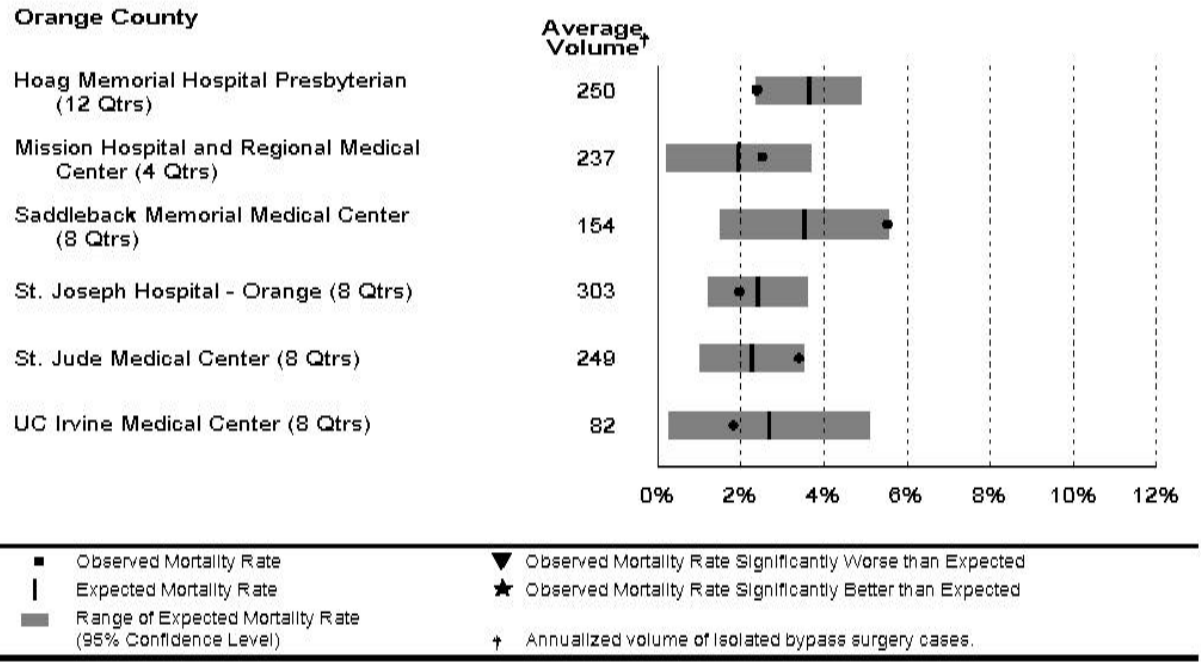
NOTE: The following hospitals in this region declined to participate:
Beverly Hospital, Brotman Medical Center, Centinela Hospital Medical Center, Downey Community Hospital, Garfield Medical Center, Huntington Memorial Hospital, Intercommunity/Citrus Valley Medical Center, LA County, Harbor-UCLA Medical Center, LA County/USC Medical Center, Lakewood Regional Medical Center, Little Company of Mary, St. Mary's Medical Center - Long Beach, White Memorial Medical Center.

Figure 3: Comparison of Observed to Expected Mortality Rate, 1997-1999
(cont.) (in Alphabetical Order by Geographical Region)



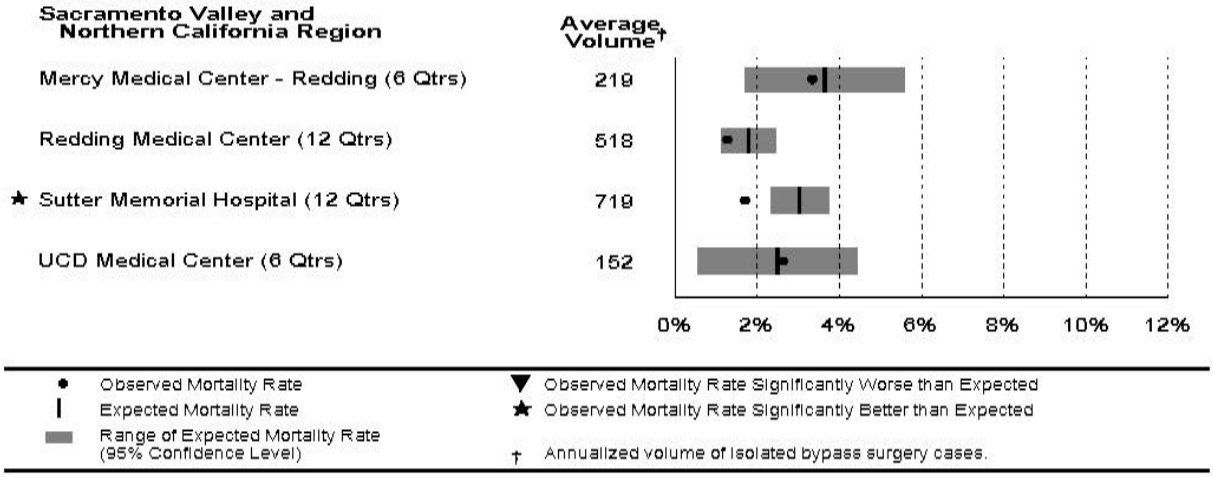
NOTE: The following hospitals in this region declined to participate:
Eisenhower Medical Center, Pomona Valley Hospital and Medical Center,
Riverside Community Medical Center, St. Mary's Regional Medical Center.

Figure 3: Comparison of Observed to Expected Mortality Rate, 1997-1999
(cont.) (in Alphabetical Order by Geographical Region)



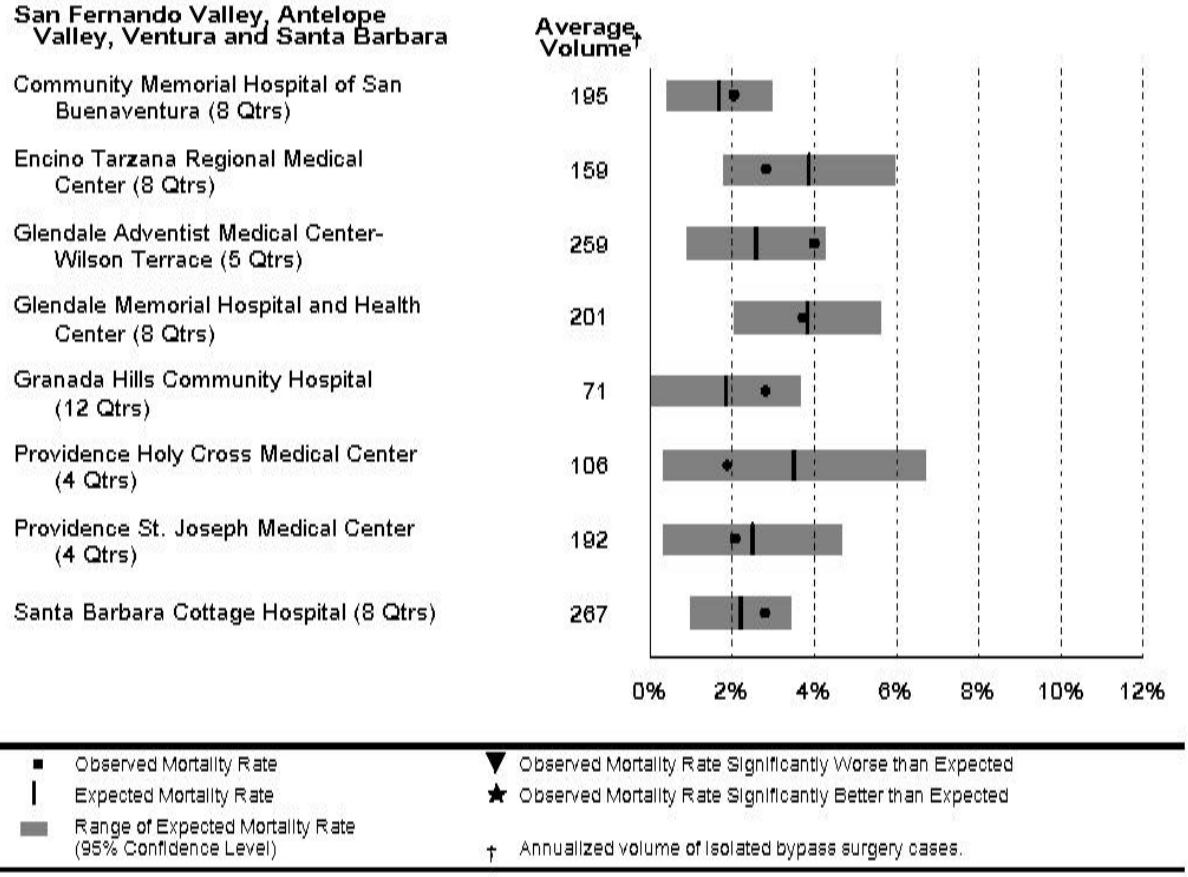
NOTE: The following hospitals in this region declined to participate:
Anaheim Memorial Medical Center, Fountain Valley Regional Hospital,
West Anaheim Medical Center, Western Medical Center - Anaheim,
Western Medical Center - Santa Ana.

Figure 3: Comparison of Observed to Expected Mortality Rate, 1997-1999
(cont.) (in Alphabetical Order by Geographical Region)



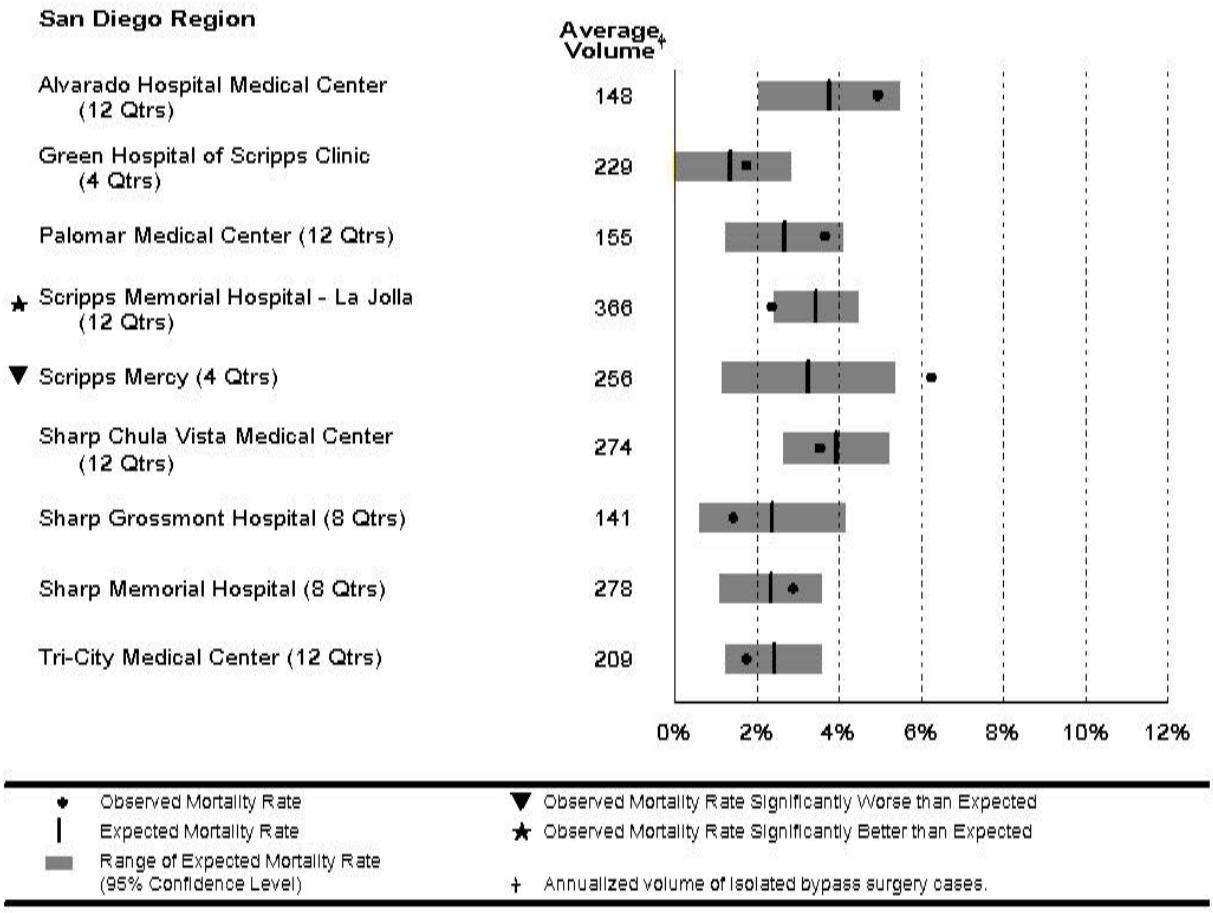
NOTE: The following hospitals in this region declined to participate:
Enloe Medical Center, Mercy General Hospital, Mercy San Juan Hospital.

Figure 3: Comparison of Observed to Expected Mortality Rate, 1997-1999
(cont.) (in Alphabetical Order by Geographical Region)



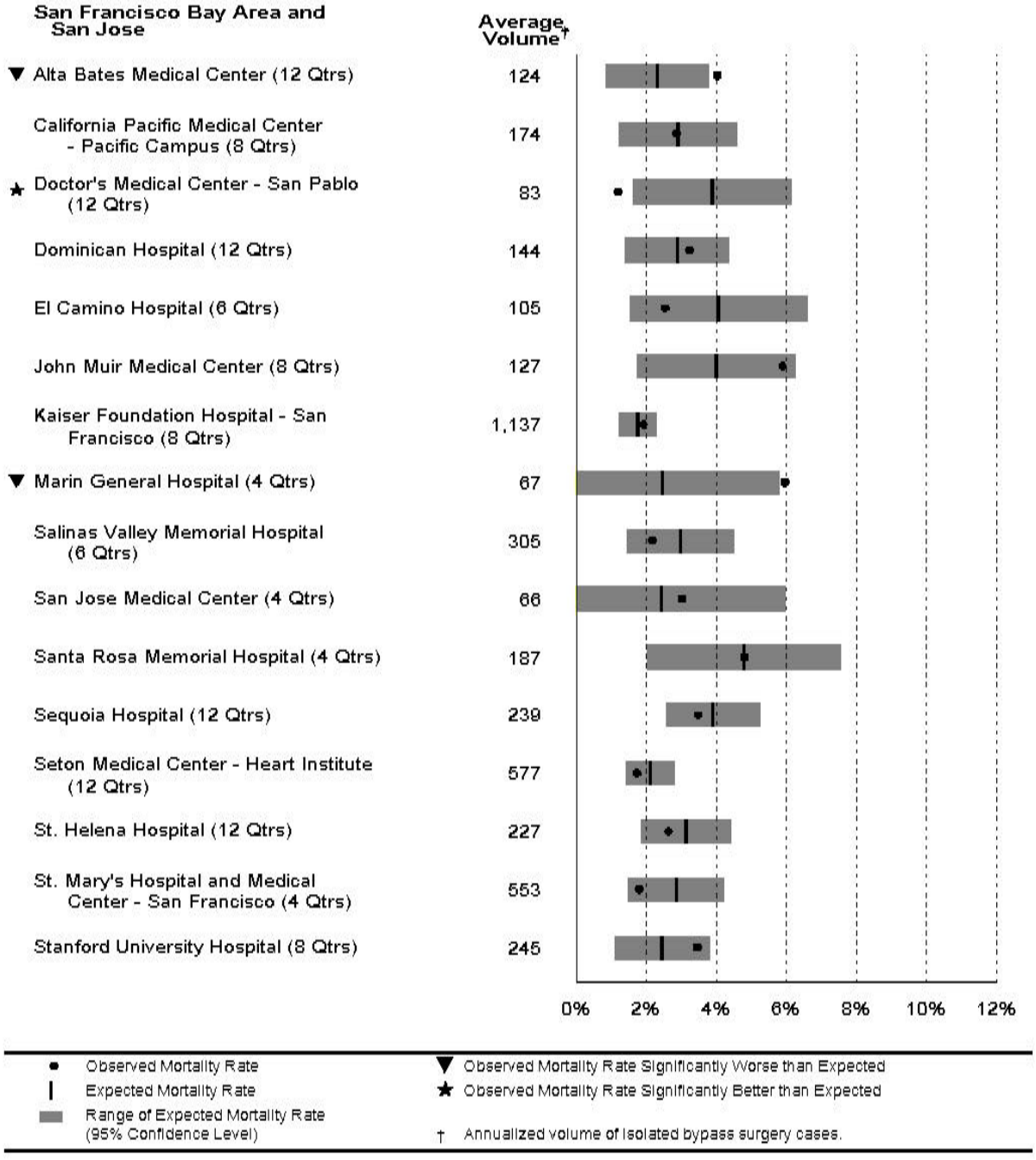
NOTE: The following hospitals in this region declined to participate:
Antelope Valley Hospital Medical Center, French Hospital - San Luis Obispo,
Lancaster Community Hospital, Los Robles Regional Medical Center,
Northridge Hospital Medical Center, St. John's Regional Medical Center - Oxnard,
Valley Presbyterian Hospital, West Hills Regional Medical Center.

Figure 3: Comparison of Observed to Expected Mortality Rate, 1997-1999
(cont.) (in Alphabetical Order by Geographical Region)



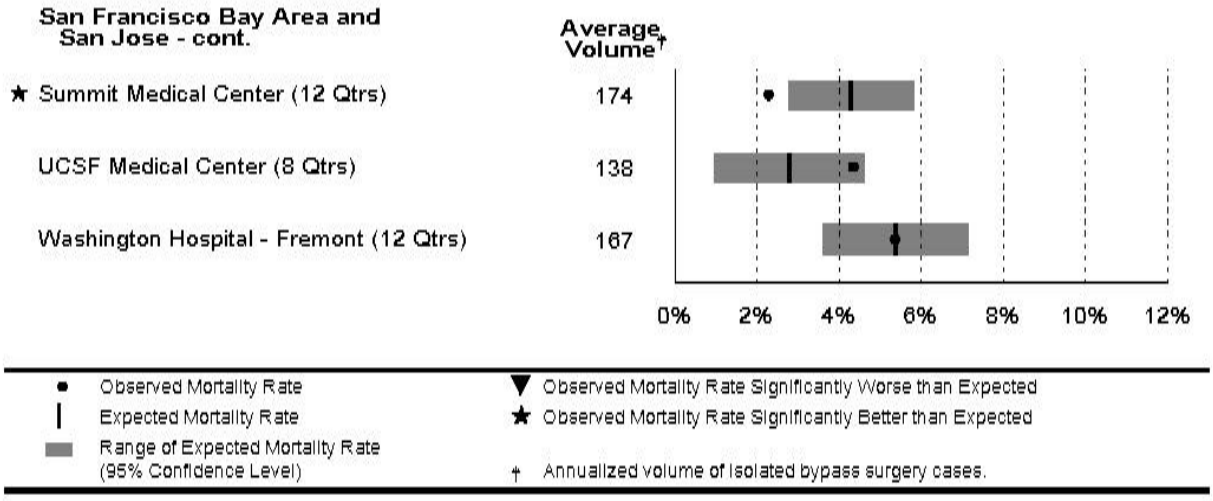
NOTE: The following hospitals in this region declined to participate:
UCSD Medical Center - Hillcrest, UCSD Medical Center - Thornton.

Figure 3: Comparison of Observed to Expected Mortality Rate, 1997-1999
(cont.) (in Alphabetical Order by Geographical Region)



NOTE: The following hospitals in this region declined to participate:
Good Samaritan Hospital - San Jose, Mt. Diablo Medical Center, O'Conner Hospital, Queen of the Valley Hospital, Santa Clara Valley Medical Center, Mills-Peninsula Hospital.

Figure 3: Comparison of Observed to Expected Mortality Rate, 1997-1999
(cont.) (in Alphabetical Order by Geographical Region)



NOTE: The following hospitals in this region declined to participate:
Good Samaritan Hospital - San Jose, Mt. Diablo Medical Center, O'Conner Hospital, Queen of the Valley Hospital, Santa Clara Valley Medical Center, Mills-Peninsula Hospital.

APPENDICES

Appendix A: CCMRP Hospital Participation Status

Table A-1 below lists the 119 hospitals in California that performed at least 25 adult isolated CABG surgeries in calendar year 1999 and their final participation status in CCMRP's 1999 reports. The number of heart procedures and isolated CABG surgeries shown in Table A-1 are derived from OSHPD's PDD, using definitions based on International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes. The numbers of isolated CABG surgeries in Table A-1 will not exactly match those provided to CCMRP by participating hospitals, as submissions to CCMRP were based on a clinical definition of isolated CABG surgery.

The following categories were used to define participation status for the 1999 data-reporting period. The table also shows the number and percentage of hospitals that fall into each category.

Key to Table A-1

Participation Status	Definition	Number	Percentage
Participating	Hospital submitted data to CCMRP and publicly released results based on a minimum of all four quarters in 1999.	70	58%
Declined to Participate	Hospital did not participate in CCMRP's 1999 public reporting period.	38	32%
Withdrew from Program	Hospital submitted a complete set of data for 1999, but elected to withdraw after viewing their results for 1999.	5	4%
Dropped-Refused Audit	Hospital refused to undergo an audit of their data and was dropped from public reporting.	2	2%
Dropped-Poor Quality Data	Hospital was unable to provide complete and accurate data and was dropped from the analysis.	2	2%
Opened in 1999	Hospital initiated its cardiac surgery program during 1999 and did not have a complete set of data for 1999.	2	2%
Total Number of Hospitals		119	100%

Table A-1: California Hospitals that Perform Adult CABG Surgeries: 1999 CCMRP Participation Status and Volume of Heart and Isolated CABG Surgeries

Hospital	CCMRP Participation Status in 1999 Program	Region	Number of Heart Surgeries*	Number of Isolated CABG Surgeries*	Isolated CABG Cases as a % of All Heart Surgeries
Alta Bates Medical Center	Participating	San Francisco Bay Area and San Jose	145	96	66.2
Alvarado Hospital Medical Center	Participating	Greater San Diego	188	147	78.2
Anaheim Memorial Hospital	Withdrew from Program	Orange County	181	133	73.5
Antelope Valley Hospital Med Ctr	Declined to Participate	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	56	45	80.4
Bakersfield Heart Hospital	Opened in 1999	Central California	56	47	83.9
Bakersfield Memorial Hospital	Declined to Participate	Central California	466	342	73.4
Beverly Hospital	Declined to Participate	Greater Los Angeles	41	38	92.7
Brotman Medical Center	Declined to Participate	Greater Los Angeles	93	83	89.2
California Pacific Medical Center	Participating	San Francisco Bay Area and San Jose	321	169	52.6
Cedars-Sinai Medical Center	Participating	Greater Los Angeles	697	351	50.4
Centinela Hospital Medical Center	Declined to Participate	Greater Los Angeles	112	66	58.9
Community Memorial Hospital – San Buenaventura	Participating	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	249	187	75.1
Dameron Hospital	Participating	Central California	129	110	85.3
Daniel Freeman Memorial Hospital	Participating	Greater Los Angeles	220	154	70.0
Desert Regional Medical Center	Participating	Inland Empire, Riverside, and San Bernardino	170	135	79.4
Doctors Medical Center – Modesto	Participating	Central California	624	515	82.5
Doctor's Medical Center – San Pablo	Participating	San Francisco Bay Area and San Jose	99	83	83.8
Dominican Santa Cruz Hospital	Participating	San Francisco Bay Area and San Jose	210	159	75.7
Downey Community Hospital	Declined to Participate	Greater Los Angeles	145	106	73.1

Table A-1: California Hospitals that Perform Adult CABG Surgeries: 1999 CCMRP Participation Status and Volume of Heart and Isolated CABG Surgeries

Hospital	CCMRP Participation Status in 1999 Program	Region	Number of Heart Surgeries*	Number of Isolated CABG Surgeries*	Isolated CABG Cases as a % of All Heart Surgeries
Eisenhower Medical Center	Declined to Participate	Inland Empire, Riverside, and San Bernardino	164	123	75.0
El Camino Hospital	Participating	San Francisco Bay Area and San Jose	155	111	71.6
Encino-Tarzana Regional Med Ctr	Participating	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	198	147	74.2
Enloe Medical Center	Declined to Participate	Sacramento Valley and Northern California	258	210	81.4
Fountain Valley Regional Hospital and Medical Center – Euclid	Declined to Participate	Orange County	189	161	85.2
French Hospital Medical Center	Declined to Participate	San Fernando Valley, Antelope Valley, Ventura, Santa Barbara	325	263	80.9
Fresno Community Hospital and Medical Center	Declined to Participate	Central California	494	378	76.5
Garfield Medical Center	Declined to Participate	Greater Los Angeles	112	97	86.6
Glendale Adventist Medical Center – Wilson Terrace	Participating	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	308	268	87.0
Glendale Memorial Hospital and Health Center	Participating	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	218	181	83.0
Good Samaritan Hospital – San Jose (Columbia)	Declined to Participate	Greater San Francisco Bay Area and San Jose	544	406	74.6
Granada Hills Community Hospital	Participating	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	84	71	84.5
Green Hospital of Scripps Clinic	Participating	Greater San Diego	314	226	72.0

Table A-1: California Hospitals that Perform Adult CABG Surgeries: 1999 CCMRP Participation Status and Volume of Heart and Isolated CABG Surgeries

Hospital	CCMRP Participation Status in 1999 Program	Region	Number of Heart Surgeries*	Number of Isolated CABG Surgeries*	Isolated CABG Cases as a % of All Heart Surgeries
Heart Hospital of the Desert	Participating	Inland Empire, Riverside, and San Bernardino	118	87	73.7
Hoag Memorial Hospital Presbyterian	Participating	Orange County	370	252	68.1
Huntington Memorial Hospital	Declined to Participate	Greater Los Angeles	440	305	69.3
Inter-Community Medical Center – Citrus Valley	Declined to Participate	Greater Los Angeles	200	173	86.5
John Muir Medical Center	Participating	San Francisco Bay Area and San Jose	167	124	74.3
Kaiser Foundation Hospital – Los Angeles (Sunset)	Participating	Greater Los Angeles	2016	1603	79.5
Kaiser Foundation Hospital – San Francisco (Geary)	Participating	San Francisco Bay Area and San Jose	1800	1280	71.1
Kaweah Delta District Hospital	Participating	Central California	482	402	83.4
Lakewood Regional Medical Center	Declined to Participate	Greater Los Angeles	246	215	87.4
Lancaster Community Hospital	Declined to Participate	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	32	25	78.1
Little Company of Mary Hospital	Withdrew from Program	Greater Los Angeles	268	167	62.3
Loma Linda University Medical Center	Participating	Inland Empire, Riverside, and San Bernardino	758	375	49.5
Long Beach Community Hospital	Dropped – Poor Quality Data	Greater Los Angeles	130	106	81.5
Long Beach Memorial Medical Center	Participating	Greater Los Angeles	565	362	64.1
Los Angeles County – USC Med Ctr	Dropped – Poor Quality Data	Greater Los Angeles	283	129	45.6
Los Angeles County Harbor – UCLA	Declined to Participate	Greater Los Angeles	246	167	67.9

Table A-1: California Hospitals that Perform Adult CABG Surgeries: 1999 CCMRP Participation Status and Volume of Heart and Isolated CABG Surgeries

Hospital	CCMRP Participation Status in 1999 Program	Region	Number of Heart Surgeries*	Number of Isolated CABG Surgeries*	Isolated CABG Cases as a % of All Heart Surgeries
Los Robles Regional Medical Center	Declined to Participate	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	376	282	75.0
Marian Medical Center	Declined to Participate	Central California	116	96	82.8
Marin General Hospital	Participating	San Francisco Bay Area and San Jose	91	69	75.8
Memorial Medical Center – Modesto	Participating	Central California	353	291	82.4
Mercy General Hospital	Dropped - Refused Data Audit	Sacramento Valley and Northern California	1566	1055	67.4
Mercy Medical Center – Redding	Participating	Sacramento Valley and Northern California	278	210	75.5
Mercy San Juan Hospital	Dropped - Refused Data Audit	Sacramento Valley and Northern California	255	186	72.9
Methodist Hospital of Southern California	Participating	Greater Los Angeles	314	262	83.4
Mills-Peninsula Medical Center	Withdrew from Program	San Francisco Bay Area and San Jose	189	137	72.5
Mission Hospital and Regional Medical Center	Participating	Orange County	284	235	82.7
Mt. Diablo Medical Center	Withdrew from Program	San Francisco Bay Area and San Jose	628	505	80.4
Northridge Hospital Medical Center	Declined to Participate	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	164	132	80.5
O'Connor Hospital – San Jose	Declined to Participate	Greater San Francisco Bay Area and San Jose	141	105	74.5
Palomar Medical Center	Participating	Greater San Diego	169	128	75.7
Pomona Valley Hospital Med Ctr	Declined to Participate	Inland Empire, Riverside, and San Bernardino	329	271	82.4

Table A-1: California Hospitals that Perform Adult CABG Surgeries: 1999 CCMRP Participation Status and Volume of Heart and Isolated CABG Surgeries

Hospital	CCMRP Participation Status in 1999 Program	Region	Number of Heart Surgeries*	Number of Isolated CABG Surgeries*	Isolated CABG Cases as a % of All Heart Surgeries
Presbyterian Intercommunity Hospital	Participating	Greater Los Angeles	94	72	76.6
Providence Holy Cross Med Ctr	Participating	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	141	108	76.6
Providence St. Joseph Med Ctr	Participating	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	282	192	68.1
Queen of the Valley Hospital – Napa	Declined to Participate	Greater San Francisco Bay Area and San Jose	152	122	80.3
Redding Medical Center	Participating	Sacramento Valley and Northern California	712	538	75.6
Riverside Community Hospital	Declined to Participate	Inland Empire, Riverside, and San Bernardino	479	383	80.0
Saddleback Memorial Medical Center	Participating	Orange County	175	128	73.1
Salinas Valley Memorial Hospital	Participating	San Francisco Bay Area and San Jose	389	323	83.0
San Antonio Community Hospital	Participating	Inland Empire, Riverside, and San Bernardino	155	118	76.1
San Joaquin Community Hospital	Declined to Participate	Central California	398	296	74.4
San Jose Medical Center	Participating	Greater San Francisco Bay Area and San Jose	113	83	73.5
Santa Barbara Cottage Hospital	Participating	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	421	278	66.0
Santa Clara Valley Medical Center	Declined to Participate	Greater San Francisco Bay Area and San Jose	110	87	79.1
Santa Monica – UCLA Medical Center	Participating	Greater Los Angeles	80	59	73.8
Santa Rosa Memorial Hospital	Participating	San Francisco Bay Area and San Jose	284	206	72.5

Table A-1: California Hospitals that Perform Adult CABG Surgeries: 1999 CCMRP Participation Status and Volume of Heart and Isolated CABG Surgeries

Hospital	CCMRP Participation Status in 1999 Program	Region	Number of Heart Surgeries*	Number of Isolated CABG Surgeries*	Isolated CABG Cases as a % of All Heart Surgeries
Scripps Memorial Hospital – La Jolla	Participating	Greater San Diego	693	428	61.8
Scripps Mercy	Participating	Greater San Diego	343	255	74.3
Sequoia Hospital	Participating	San Francisco Bay Area and San Jose	553	238	43.0
Seton Medical Center	Participating	San Francisco Bay Area and San Jose	589	483	82.0
Sharp Chula Vista Medical Center	Participating	Greater San Diego	343	287	83.7
Sharp Grossmont Hospital	Participating	Greater San Diego	191	146	76.4
Sharp Memorial Hospital	Participating	Greater San Diego	482	254	52.7
St. Agnes Medical Center	Declined to Participate	Central California	492	357	72.6
St. Bernardine Medical Center	Participating	Inland Empire, Riverside, and San Bernardino	704	554	78.7
St. Francis Medical Center	Participating	Greater Los Angeles	111	92	82.9
St. Helena Hospital	Participating	San Francisco Bay Area and San Jose	301	256	85.0
St. John's Hospital and Health Center – Santa Monica	Participating	Greater Los Angeles	215	152	70.7
St. John's Regional Medical Center – Oxnard	Declined to Participate	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	201	146	72.6
St. Joseph Hospital – Eureka	Opened in 1999	Central California	68	61	89.7
St. Joseph Hospital – Orange	Participating	Orange County	391	303	77.5
St. Joseph's Medical Center – Stockton	Participating	Central California	356	277	77.8
St. Jude Medical Center	Participating	Orange County	370	294	79.5
St. Mary Med. Center – Long Beach	Withdrew from Program	Greater Los Angeles	115	76	66.1

Table A-1: California Hospitals that Perform Adult CABG Surgeries: 1999 CCMRP Participation Status and Volume of Heart and Isolated CABG Surgeries

Hospital	CCMRP Participation Status in 1999 Program	Region	Number of Heart Surgeries*	Number of Isolated CABG Surgeries*	Isolated CABG Cases as a % of All Heart Surgeries
St. Mary Regional Medical Center – Apple Valley	Declined to Participate	Inland Empire, Riverside, and San Bernardino	205	169	82.4
St. Mary's Medical Center – San Francisco	Participating	Greater San Francisco Bay Area and San Jose	649	566	87.2
St. Vincent Medical Center	Participating	Greater Los Angeles	416	277	66.6
Stanford University Hospital	Participating	San Francisco Bay Area and San Jose	643	224	34.8
Summit Medical Center	Participating	San Francisco Bay Area and San Jose	291	195	67.0
Sutter Memorial Hospital	Participating	Sacramento Valley and Northern California	1028	639	62.2
The Hospital of the Good Samaritan Hospital – Los Angeles	Participating	Greater Los Angeles	938	648	69.1
Torrance Memorial Medical Center	Participating	Greater Los Angeles	351	213	60.7
Tri-City Medical Center	Participating	Greater San Diego	250	185	74.0
UC San Diego University Medical Center – Hillcrest	Declined to Participate	Greater San Diego	184	31	16.8
UC San Diego University Medical Center – Thornton	Declined to Participate	Greater San Diego	224	68	30.4
UCLA Medical Center	Participating	Greater Los Angeles	749	199	26.6
UCSF Medical Center	Participating	San Francisco Bay Area and San Jose	633	135	21.3
University of California Davis Medical Center	Participating	Sacramento Valley and Northern California	295	166	56.3
University of California Irvine Medical Center	Participating	Orange County	101	65	64.4

Table A-1: California Hospitals that Perform Adult CABG Surgeries: 1999 CCMRP Participation Status and Volume of Heart and Isolated CABG Surgeries

Hospital	CCMRP Participation Status in 1999 Program	Region	Number of Heart Surgeries*	Number of Isolated CABG Surgeries*	Isolated CABG Cases as a % of All Heart Surgeries
USC University Hospital	Participating	Greater Los Angeles	234	105	44.9
Valley Presbyterian Hospital	Declined to Participate	San Fernando Valley, Antelope Valley, Ventura, and Santa Barbara	77	66	85.7
Washington Hospital – Fremont	Participating	San Francisco Bay Area and San Jose	202	170	84.2
West Anaheim Medical Center	Declined to Participate	Orange County	65	59	90.8
West Hills Regional Medical Center	Declined to Participate	San Fernando Valley, Antelope Valley, Ventura & Santa Barbara	90	75	83.3
Western Medical Center – Anaheim	Declined to Participate	Orange County	237	196	82.7
Western Medical Center – Santa Ana	Declined to Participate	Orange County	124	95	76.6
White Memorial Medical Center	Declined to Participate	Greater Los Angeles	117	99	84.6
Total All Hospitals			39,549	27,641	69.9

*Source: Excludes three Veterans Administration Hospitals in Los Angeles, San Diego, and San Francisco that also perform CABG surgeries. For this table, counts of surgical procedures are calculated from the patient's date of discharge from a hospital (that is, a patient receiving a CABG surgery on December 30, 1999 who was discharged on January 3, 2000 is counted among 2000 discharges). The source of the numbers listed in the tables above is the Office of Statewide Health Planning and Development (OSHPD) PDD, which contains billing/administrative codes for all discharges from California hospitals. These numbers may not match the number of isolated CABG surgeries submitted to CCMRP by hospitals, which are based on a clinical definition of isolated CABG surgery.

Number of Heart Surgeries calculated using the following ICD-9-CM codes: 35.10, 35.11, 35.12, 35.14, 35.20, 35.21, 35.22, 35.23, 35.24, 35.27, 35.28, 35.31, 35.32, 35.33, 35.39, 35.51, 35.53, 35.61, 35.62, 35.71, 35.93, 36.03, 36.10, 36.11, 36.12, 36.13, 36.14, 36.15, 36.16, 36.17, 36.19, 36.91, 36.99, 37.32, 37.4x, 37.65, 37.66, 39.61.

Number of Isolated CABG surgeries calculated using the following ICD-9-CM codes: Any record with 36.1x, excluding the following: 35.1x, 35.2x, 35.3x, 35.4x, 35.5x, 35.6x, 35.7x, 35.8x, 35.9x, 37.32, 37.35, 37.5x, 37.67, 38.10, 38.11, 38.12, 38.14, 38.15, 38.44, 38.45, 39.21, 39.22, 39.23, 39.24, 39.25, 39.26, 39.28, 39.51, 39.52, 39.53, 39.54, 39.55, 39.59, V433, provided the date of the CABG 36.1x procedure and excluded procedure occurred on the same day

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